

LISTING OF CLAIMS

1. (Currently Amended) An armor capable of withstanding penetration by a projectile impacting the armor, the armor comprising: at least one energy absorbing layer, said at least one energy absorbing layer consisting essentially of a metallic material that absorbs energy from the impacting projectile, said metallic material being and is selected from at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%; and at least one second layer of a metallic material that is contiguous with and metallurgically bonded to the at least one energy absorbing layer.
2. (Cancelled)
3. (Cancelled)
4. (Currently Amended) The armor of claim 1, wherein said metallic material that undergoes a reversible phase change upon absorbing energy undergoes a reversible endothermic phase change when heated to a predetermined temperature.
5. (Original) The armor of claim 4, wherein said predetermined temperature is at least -50°C and is no greater than 200°C.
6. (Currently Amended) The armor of claim 5, wherein said metallic material that absorbs energy from the impacting projectile is selected from the group consisting of nickel-titanium alloys, copper-zinc alloys, and copper-aluminum-nickel-manganese alloys.
7. (Currently Amended) The armor of claim 6, wherein said metallic material that absorbs energy from the impacting projectile is an alloy consisting essentially of 45 up to 55 atomic percent nickel, 45 up to 55 atomic percent titanium, and incidental impurities.
8. (Currently Amended) The armor of claim 7, wherein said metallic material that absorbs energy from the impacting projectile is Nitinol.

9. (Currently Amended) The armor of claim 1, wherein the armor comprises a first plate including a first energy absorbing layer and a second energy absorbing layer, wherein said first energy absorbing layer ~~is a layer~~ consists essentially of a metallic material that absorbs energy by a reversible phase change, and wherein said second energy absorbing layer ~~is a layer~~ consists essentially of a metallic material that absorbs energy by elastic deformation and exhibits elastic strain of at least 5%, and wherein at least one of the first energy absorbing layer and the second energy absorbing layer is contiguous with and metallurgically bonded to the at least one second layer.
10. (Currently Amended) The armor of claim ~~21~~, wherein said at least one energy absorbing layer ~~first layer~~ is a first plate, and said at least one second layer is the armor further comprising a second plate, said a second plate, and wherein the metallic material of said second plate is comprising a material that differs different from said metallic material of said first plate.
11. (Original) The armor of claim 10, wherein said second plate comprises a material selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and $\alpha\beta$ titanium alloy.
12. (Withdrawn) The armor of claim 11, wherein said second plate comprises an α titanium alloy that is at least one of grades 1-4 CPTi.
13. (Previously Presented) The armor of claim 11, wherein said second plate comprises an $\alpha\beta$ titanium alloy that is Ti(6-4).
14. (Withdrawn) The armor of claim 11, wherein said second plate comprises a β titanium alloy that is at least one of Ti(10-2-3) and Ti(15-3-3-3).
15. (Cancelled)
16. (Currently Amended) The armor of claim ~~45~~10, wherein said second plate is diffusion bonded to said first plate.

17. (Currently Amended) The armor of claim 10, further comprising a third plate disposed opposite said second plate and comprised of a material that differs from said metallic material of said first plate.
18. (Previously Presented) The armor of claim 17, wherein said third plate comprises a material selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and $\alpha\beta$ titanium alloy.
19. (Currently Amended) The armor of claim 21, wherein said ~~first~~ at least one energy absorbing layer is a first plate ~~and said metallic material comprises an alloy~~ consisting essentially of 45 up to 55 atomic percent nickel, 45 up to 55 atomic percent titanium, and incidental impurities, and wherein the armor said at least one second layer is ~~further comprising~~ a second plate including a material selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and $\alpha\beta$ titanium alloy.
20. (Cancelled)
21. (Original) The armor of claim 19, further comprising a third plate disposed opposite said second plate and comprising a material that differs from said first plate.
22. (Previously Presented) The armor of claim 21, wherein said third plate comprises a material selected from the group consisting of titanium, gamma phase titanium-aluminum, α titanium alloy, β titanium alloy, and $\alpha\beta$ titanium alloy.
23. (Previously Presented) The armor of claim 21, wherein said first plate is contiguous with said third plate.
- 24 – 44 (Cancelled)
45. (Currently Amended) An article of manufacture including an armor capable of resisting penetration by a projectile impacting the armor, the armor comprising at least one energy absorbing layer, said at least one energy absorbing layer consisting essentially of a metallic material that absorbs energy from the impacting projectile,

said metallic material being at least one of ~~and is selected from~~ a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%; and at least one second layer of a metallic material that is contiguous with and metallurgically bonded to the at least one energy absorbing layer.

46. (Original) The article of manufacture of claim 45, wherein the article is an armored vehicle.

47 – 54 (Cancelled)

55. (Currently Amended) An article of manufacture ~~armor plate~~ comprising at least one energy absorbing plate~~layer~~, said at least one energy absorbing plate consisting essentially of a metallic material, said metallic material being ~~selected from~~ at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%, wherein the article of manufacture is an armor plate.

56. (Currently Amended) An armor comprising:

- a first plate comprising at least one energy absorbing layer consisting essentially of a metallic material, said metallic material being ~~selected from~~ at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%;
- a second plate ~~adjacent~~ contiguous with and metallurgically bonded to at least a portion of said first plate, said second plate comprising a metallic material that differs from said metallic material of said first plate; and
- a third plate disposed opposite said second plate and being contiguous with and metallurgically bonded to at least a portion of said first plate, said third plate comprising a metallic material that differs from said metallic material of said first plate.

57. (Currently Amended) An armored vehicle including an armor plate, said armor plate comprising at least one energy absorbing plate layer ~~consisting essentially~~ of a metallic material, said metallic material being selected from ~~at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%.~~

58. (Currently Amended) An armored vehicle including an armor, said armor comprising:

- a first plate comprising at least one energy absorbing layer consisting essentially of a metallic material, said metallic material being selected from ~~at least one of a metallic material that undergoes a reversible phase change upon absorbing energy and a metallic material that exhibits an elastic strain deformation of at least 5%;~~
- a second plate ~~adjacent~~ contiguous with and metallurgically bonded to at least a portion of said first plate, said second plate comprising a metallic material that differs from said metallic material of said first plate; and
- a third plate disposed opposite said second plate and being contiguous with and metallurgically bonded to at least a portion of said first plate, said third plate comprising a metallic material that differs from said metallic material of said first plate.

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